Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An MAP decoder, comprising:

a backward processor that calculates first resultant values of an L-symbol long sequence and second resultant values of a W-symbol long sequence;

a forward processor that calculates third resultant values;

a memory that stores the second resultant values in a first order and outputs the second resultant values in a second order that is the reverse of the first order; and

an output determination module that determines output values of a received sequence using the third resultant values and the outputted second resultant values of the previous window, wherein

the L-symbol long sequence and the W-symbol long sequence are portions of the received sequence,

the first, second, and third resultant values are state probability values,

the calculations of the first and third resultant values overlap in time, and

the calculation of the first resultant values for the next window is performed after the calculation of the second resultant values is completed.

2. (Previously Presented) The MAP decoder of claim 1, wherein the memory stores a plurality of groups of the second resultant values by alternately using increasing and decreasing sequential addresses to store subsequent groups of the second resultant values.

3. (Original) The MAP decoder of claim 1, wherein the memory repeatedly writes newly calculated second resultant values and reads the stored second resultant values by alternately using: (1) increasing sequential addresses for the write operation and decreasing sequential addresses for the read operation and (2) decreasing sequential addresses for the write operation and increasing sequential addresses for the read operation, as the write and read operations are applied to each of a plurality of groups of the second resultant values.

4. (Previously Presented) The MAP decoder of claim 1, wherein:

the received sequence has a symbol length of T symbols;

each of the first resultant values corresponds to an input value of the L-symbol long sequence;

each of the first resultant values is calculated in a sequential order that is the reverse of the order of receipt of the corresponding input value; and

a first calculated value in the ordered sequence of the first resultant values corresponds to the i^{th} symbol received in the received sequence, where i is identified by the equation $i = L + (T \bmod W)$ and $(T \bmod W)$ is modulo division providing the remainder of the division.

5. (Previously Presented) The MAP decoder of claim 1, wherein:

the received sequence has a symbol length of T symbols;

each of the second resultant values corresponds to an input value of the W-symbol long sequence;

each of the second resultant values is calculated in a sequential order that is the reverse of the order of receipt of the corresponding input value; and

a first calculated value in the ordered sequence of the second resultant values corresponds to the j^{th} symbol received in the received sequence, where j is identified by the equation $j = (T \bmod W)$ and $(T \bmod W)$ is modulo division providing the remainder of the division.

6. (Previously Presented) The MAP decoder of claim 1, wherein:

the received sequence has a symbol length of T symbols;

each of the third resultant values corresponds to an input value of the W-symbol long sequence;

each of the third resultant values is calculated in the order of receipt of the corresponding input value; and

a last calculated value in the ordered sequence of the third resultant values corresponds to the k^{th} symbol received in the received sequence, where k is identified by the equation k = (T mod W) and (T mod W) is modulo division providing the remainder of the division.

7. (Previously Presented) The MAP decoder of claim 3, wherein:

each of the output values corresponds to an input value of the W-symbol long sequence; and

the output determination module outputs each of the output values in the same order as the order of receipt of the corresponding input value of the W-symbol long sequence.

8. (Previously Presented) A method of performing an MAP turbo decoding, comprising:

calculating first resultant values of an L-symbol long sequence;

calculating second resultant values of a W-symbol long sequence;

calculating third resultant values of the W-symbol long sequence;

storing the second resultant values in a first order and outputting the stored second resultant values in a second order that is the reverse of the first order; and

outputting decoded values of a received sequence using the third resultant values and the outputted second resultant values of the previous window, wherein

the L-symbol long sequence and W-symbol long sequence are portions of the received sequence,

the first, second, and third resultant values are state probability values,

the calculations of the first and third resultant values overlap in time, and

the calculation of the first resultant values for the next window is performed after the calculation of the second resultant values is completed.

9. (Original) The method of claim 8, further comprising writing a plurality of groups of the second resultant values by alternately using increasing and decreasing sequential addresses to write subsequent groups of the second resultant values.

10. (Original) The method of claim 8, further comprising:

repeatedly writing newly calculated second resultant values and reading the stored second resultant values by alternately using: (1) increasing sequential addresses for the write operation and decreasing sequential addresses for the read operation and (2) decreasing sequential addresses for the write operation and increasing sequential addresses for the read operation, as the write and read operations are applied to each of a plurality of groups of the second resultant values.

11. (Previously Presented) The method of claim 8, wherein:

the received sequence has a symbol length of T symbols;

each of the first resultant values corresponds to an input value of the L-symbol long sequence;

each of the first resultant values is calculated in a sequential order that is the reverse of the order of receipt of the corresponding input value; and

a first calculated value in the ordered sequence of the first resultant values corresponds to the i^{th} symbol received in the received sequence, where i is identified by the equation $i = L + (T \bmod W)$ and $(T \bmod W)$ is modulo division providing the remainder of the division.

12. (Previously Presented) The method of claim 8, wherein:

the received sequence has a symbol length of T symbols;

each of the second resultant values corresponds to an input value of the W-symbol long sequence;

each of the second resultant values is calculated in a sequential order that is the reverse of the order of receipt of the corresponding input value; and

a first calculated value in the ordered sequence of the second resultant values corresponds to the j^{th} symbol received in the received sequence, where j is identified by the equation j = (T mod W) and (T mod W) is modulo division providing the remainder of the division.

13. (Previously Presented) The method of claim 8, wherein:

the received sequence has a symbol length of T symbols;

the W-symbol long sequence is a portion of the received sequence;

each of the third resultant values corresponds to an input value of the W-symbol long sequence;

each of the third resultant values is calculated in the order of receipt of the corresponding input value; and

a last calculated value in the ordered sequence of the third resultant values corresponds to the k^{th} symbol received in the received sequence, where k is identified by the equation k = (T mod W) and (T mod W) is modulo division providing the remainder of the division.

14. (Previously Presented) The method of claim 8, wherein:

each of the decoded values corresponds to an input value of the W-symbol long sequence; and

the decoded values are output in the same order as the order of receipt of the corresponding input value of the W-symbol long sequence.

15. (Currently Amended) A method of turbo-decoding a received sequence using a Maximum A Posteriori (MAP) algorithm, comprising:

performing a learning by a backward processor for a predetermined length;

calculating and storing ~~second~~ <u>first</u> resultant values obtained by the backward processor;

calculating ~~third~~ <u>second</u> resultant values by a forward processor that overlaps in time with the next learning; and

determining a decoding symbol output using the ~~third~~ second resultant values and the stored ~~second~~ first resultant values of the previous window,

wherein if a processing length of the backward processor is W, and a length of a received bit sequence is K, a length of a first data block W_0 to be processed is determined by the equation KmodW.

16. (Currently Amended) The turbo-decoding method of claim 15, wherein if a processing length of the backward or forward processor is W, a length of learning is L, ~~a remainder obtained by dividing a length of a received sequence by W is W_0,~~ and N is an integer not less than 1,

the learning is performed by the backward processor on sequential symbol portions of the received sequence identified by the range W_0+NW+L to W_0+NW;

the ~~second~~ first resultant values calculated by the backward processor on sequential symbol portions identified by the range of the received sequence W_0+NW to W_0+(N-1)W are stored;

the ~~third~~ second resultant values calculated by the forward processor on the sequential symbol portions of the received sequence identified by W_0+(N-1)W to W_0+NW; and

the decoding symbol determination is performed with the ~~third~~ second resultant values and the ~~second~~ first resultant values based on the sequential symbol portions of the received sequence identified by the range $W_0+(N-1)W$ to W_0+NW.

17. (Currently Amended) The turbo-decoding method of claim 15, wherein if a processing length of the backward or forward processor is W, a length of learning is L, ~~a remainder obtained by dividing a length of the received sequence by W is W_0,~~ and N is an integer equal to 0;

the learning is performed by the backward processor on sequential symbol portions of the received sequence identified by the range $W_0 + L$ to W_0;

the second first resultant values calculated by the backward processor on sequential symbol portions of the received sequence identified by the range W_0 to 0 are stored; and

the ~~third~~ second resultant values calculated by the forward processor on the sequential symbol portions of the received sequence identified by the range 0 to W_0 are calculated during a period overlapping in time simultaneously the learning performed in the next window.

18. (Currently Amended) The turbo-decoding method of claim 15, wherein the ~~second~~ first resultant values are written through one port of a dual-port RAM (DPRAM) and are read out through another port thereof.

19. (Currently Amended) The method of claim 15, further comprising writing a plurality of groups of the ~~second~~ first resultant values by alternately using increasing and decreasing sequential addresses to store subsequent groups of the ~~second~~ first resultant values.

20. (Currently Amended) The method of claim 15, further comprising:

repeatedly storing newly calculated ~~second~~ first resultant values and reading the stored ~~second~~ first resultant values by alternately using: (1) increasing sequential addresses for the store operation and decreasing sequential addresses for the read operation and (2) decreasing sequential addresses for the store operation and increasing sequential addresses for the read operation, as the write and read operations are applied to each of a plurality of groups of the ~~second~~ first resultant values.

21. (Previously Presented) The method of claim 15, further comprising:

outputting a plurality of the decoding symbol outputs as decoded values, wherein

each of the decoded values corresponds to an input value of a W-symbol long sequence; and

the decoded values are output in the same order as the order of receipt of the corresponding input value of the W-symbol long sequence.

22. (New) The turbo-decoding method of claim 15, wherein if a result of the module calculation equals 0, $W_0 = W$ such that a final processed block by the backward processor will be equal to W.

23. (New) A Maximum A Posteriori (MAP) decoder in a receiving end that performs an iterative decoding, the MAP decoder comprising:

a backward processor for learning for a predetermined length L and calculating first state probability values for a window length of W_0 of a received sequence from W_0 to 0 or for a window length W of a received sequence from $W_0+(N+1)W$ to W_0+NW after the predetermined length L;

a forward processor for calculating second state probability values for a window length of W_0 of the received sequence from 0 to W_0 or for a window length of W from W_0+NW, wherein the N is an integer in a range of 0 to N;

a memory means for storing in a first order the first state probability values and outputting in a reverse of the first order the state probability values; and

an output determination means for determining output values of the received sequence using first state probability values and second state probability values, wherein W_0 is determined based on a code block size and the window length W.

24. (New) A method of performing a Maximum A Posteriori (MAP) turbo decoding in a receiving end that performs an iterative decoding, the method comprising:

learning for a predetermined length L and calculating first state probability values for a window length of W_0 of a received sequence from W_0 to 0 or for a window length W of a received sequence from $W_0+(N+1)$ W to W_0+NW after the predetermined length L;

calculating second state probability values for a window length of W_0 of the received sequence from 0 to W_0 or for a window length of W from W_0 to $W_0+(N+1)W$, wherein the N is an integer in a range of 0 to N;

storing in a first order the first state probability values and outputting in a reverse of the first order the first state probability values; and

determining output values of the received sequence using first state probability values and second state probability values, wherein W_0 is determined based on a code block size and the window length W.

25. (New) The method of turbo-decoding a received sequence using a Maximum A Posteriori (MAP) algorithm, the method comprising:

performing a backward processing by learning for a predetermined length L and calculating first resultant values for a first processing length W_0 or a second processing length W after the predetermined length L;

storing the first resultant values;

performing a forward processing by calculating second resultant values for a first processing length W_0 or the second processing length;

determining a decoding output using the first resultant values and the second resultant values, wherein the W_0 is a remainder obtained by dividing a received sequence by the second processing length W.